RAIL CAR LID LIFTER

Field of the Invention

This invention relates to the field of material handling and more particularly to apparatus to lift, remove, store and replace rail car lids.

Background of the Invention

Railroad cars such as gondolas that carry various size metal coils are covered with one or two metal lids. The top of some cars reach five and half feet from the railroad track. The top of the load lifting attachment (handle) on the top of the lids may be fourteen to fifteen feet above ground. In the normal operation of loading rails cars with large metal coils which can weigh fifteen to twenty-two tons, a crane is used, usually with a four legged bridle, to remove the lids from the rail cars. These lids are then placed far enough from the crane so coils can be delivered within reach of the crane to load the rail car. The crane operator can not do this unassisted. To attach the bridle, a man must climb onto the lid, which is inherently dangerous since these lids do not provide catwalks. This rigging is time consuming and labor intensive as well.

It is, therefore, an object of this invention to provide apparatus that will safely and economically permit removal of the lids without rigging a crane for this purpose. Furthermore, rail yards in which this type of work is carried out have many fork lift trucks which are adapted to transport, lift and lower loads, ordinarily on skids or pallets, in the course of loading and unloading such heavy materiel as metal coils.

It is a further object of this invention to provide an accessory to such a fork lift truck that will permit the operator to engage, lift, transport and lower to temporary storage a rail car lid without the intervention of anyone other than the fork lift operator or use of any other piece of material handling apparatus.

A still further object of the invention is to provide an accessory that will not require any modification of the fork lift truck such as removal or replacement of the forks in order to engage in rail car lid lifting.

Brief Description of the Invention

The invention which solves the objects stated above is an adjunct to an industrial fork lift truck comprising a boom adapted to engage all common forms of railcar lid handles and of adequate strength and length mounted on a frame of adequate height that has a palette-like base adapted for handling by a fork lift truck. It comprises a base configured as a palette adapted for fork truck handling, a frame mounted thereto, and a boom mounted to the frame at one end of the boom and having generally at the other end at least one fitting for engaging a lid handle wherein the assembly of said boom, frame and base freely stands on the base when not in use thereby providing convenient means for removing storing and replacing rail car lids and for storing the lifter itself while the fork truck is otherwise engaged.

In another embodiment for use with a ram truck that handles coils of sheet metal, the palette-like base carries a collar extending through the base through which the ram of the truck can be passed. Locking means are provided. This preferred embodiment is configured so that it can be handled by a fork truck as well as a ram truck.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side elevational view of the railcar lid remover of the invention.
Figure 2 is a perspective view of the invention in use with a fork truck (partially shown) with the boom of the invention engaged with the handle of a railcar lid.
Figure 3 is a partial perspective view of a preferred boom without the end cap.
Figure 4 is a partial perspective view of the preferred boom showing an alternate lifting fitting the boom having a broken-away section to show lifting hooks .
Figures 5a, 5b, 5c, 5d are partial perspective views of typical car lid handles.
Figure 6 is a side elevational view of a further embodiment adapted for use by a ram truck.
Figure 7 is a partial end view of the embodiment of Figure 6.

DETAILED DECRIPTION OF THE INVENTION

The railcar lid remover or lifter **10** of the invention, as seen in Figure 1, is a self-standing unit which can be stored convenient to an area where gondola cars and the like are unloaded by cranes. The structure stands on base **12** which is configured as a palette for handling by a standard industrial fork truck commonly used in loading yards. Base **12** is fabricated from members, preferably steel, of sufficient strength and thickness to withstand the loads encountered in working with the various rail car lidsf metal which may weigh as much as 1 ton. A welded structure is preferred for the base and for fabricating and joining all elements of the structure with the exception of certain fittings which are removably fastened to a boom **16**.

Mounted on base **12** is frame **14,** also of sufficient strength to withstand the forces of compression, bending and twisting encountered in service. It is high enough so that boom **16** which is mounted to frame **14** can be lifted by a fork truck **20** within the limits of its vertical lift distance to a level clearing the top of a lidded railcar standing on the tracks. Boom **16** is long enough to permit reaching the centerline of a railcar **17** when the fork truck has approached relatively close to the side of the car but not so long that an overturning moment is created in use or when the device is standing alone in storage. Stay **18** and standoff **19** may be provided to minimize boom bending when a lid is picked up. Safety strap **22** is provided so that the operator of the fork can insure that the lid remover remains in place on the forks when in use especially during transport without a load. It readily is released when the operator drops the lid lifter **10** for storage and returns the fork truck **20** to other activities.

Figure 2 shows a typical lid removal activity (the replacement procedure essentially is the reverse). Rail car **17**, here a gondola, is covered by one or more lids **26**. These have centrally located handles **28**. Unfortunately, the railroad industry has not settled on a single standard design for a rail car lid handle. Four differing units are common and these are shown in Figures 5a, 5b, 5c, and 5d. For convenience boom **16** carries fittings **30** and **32** which are configured so that any one of the four types of handles can be engaged. Fitting **30** is a saddle on the upper surface of. boom **16.** This is suited to the handle of Figure 5d . Limit stop **32** is spaced a short

distance away on the top surface of boom **16** between fitting **30** and the end of the boom above frame **14.** This prevents a lid from sliding along the boom too far toward the fork truck if the operator errs. Fitting **34** is a pair of hooks on the lower surface of boom **16** useful for any variety of handle **102** which does not allow clearance for the boom between the top of the lid and the bottom of the handle or between upright member thereof. If ever other handle designs appear, it would be simple to provide suitable fittings.

Lifter **10** is shown in Figure 2 with base **12** engaged on forks **36** of fork truck **20.** These have been lifted high enough for boom **16** to be inserted into handle **102** and then lifted so that fitting **30** engages and then lifts handle **102** and lid **26**.

For lids having handles of the type shown in Figure 5d, it is preferred to modify saddle fitting **30** by replacing it with plug fitting **23**. Suitable fasteners, not shown, hold the plug fitting **23** in place. An advantage of this arrangement in use is that plug **23** fits into the inside of the top of the handle and prevents it from swiveling. An elastomeric, or other cushioning material, pad **25** may be secured to the upper surface of plug fitting **23.**

A preferred lid remover has the following dimensions :

Base **12** is 9 inches high by 5 foot 8 inches on a side and fabricated from 5/8th inch steel plate. Two opposing sides are fabricated 8 inch by 6 and ½ inch by ½ inch I-beams with one side cut away. The remaining flange is welded in place on the underside of the base with the flange facing in. Two facing plates, with 7 inch high by 9 inch cutouts ("pockets") for entry of the forks, are welded one inch from the end of the base to the underside and each is braced by two one inch thick triangular steel gussets.

Frame **14** comprises two 8 inch by 8 inch by 3/8 inch box tubes **15** and **13** that are 7 feet long and welded to base **12** slightly in from opposite ends along the centerline between the cutouts. Welded on top of the two box tubes, is boom **16** which is fabricated from a modified 8 inch by 6 and ½ inch by ½ inch I-beam with ½

inch plates for the sides as shown in Figure 3. A cap is welded on each end of boom **16**. Fish plates **17** reinforce the welded joints. Saddle **30** is removably bolted on top of boom **16** about one foot from the end and stop **26** is spaced about 1 foot 3 inches farther in. An elastomeric pad **25** may be cemented on the top surface of plug **23.**

In use, car **17** is spotted. An operator drives fork truck **20** to where lid lifter **10** stands in storage, adjusts the height of the forks **36**, aims and drives the forks into engagement in the base **12** which is then lifted slightly for transport after safety strap **22** is fastened to the fork truck **20**. The operator approaches the side of rail car **17** and aims boom **16** into handle **102** by lifting and/or tilting the lift mechanism of the truck and driving the truck forward. A further slight lift engages saddle fitting **30** with handle **102**. Additional lifting raises lid **26** away from car **17** and the fork truck **20** with its load can be backed out of the way. Car **17** can then be emptied as is customary using a crane while lid **26** is held with the fork truck or stored on the ground. When the car **17** is empty, lid **26** then can be returned and lowered into position there. The fork truck operator then can disengage boom **16** from lid **26** and back away. At will, lid lifter **10** can be stored by transporting it to a selected spot, lowering it to the ground and pulling out the fork or ram.

Details of preferred component-structures are shown in the figures. These are designer choices and other configurations and materials of construction could be used to perform the illustrated and described functions within the strength and geometric limitations imposed by the intended service.